## REMARKS

Applicant concurrently files herewith a Petition (and fee) for a One-Month Extension of Time.

Applicant concurrently files herewith an excess claim fee for five additional dependent claims.

Applicant respectfully submits with this Amendment an attached Declaration Under 37 C.F.R. § 1.132 dated February 6, 2004, by Engineer, Tetsuya Yoshinari, at NEC Tokin. (See Attached Declaration).

Claims 1-10 and 17-38 are all the claims presently being examined in the application. Applicant has added new claims 34-38 to more particularly define the invention. Applicant gratefully acknowledges the Examiner's allowance of claims 2-4, 6, 7, 9, 10, 18, 19 and 25.

With respect to the prior art rejections, Claims 1, 5, 8, 17, 20-24, and 26-33 stand rejected upon informalities (e.g., 35 U.S.C. § 112, second paragraph) and claims 1, 5, 8, 20-24, and 26-31 stand rejected on prior art grounds. Claims 1, 5, 20, 21, 24, and 27-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et al. (U.S. Pat. No. 5,656,393). Claims 8 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et al. (U.S. Pat. No. 5,656,393) and as evidenced by Poehler, et al. (U.S. Pat. No. 5,637,421). Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et al. (U.S. Pat. No. 5,656,393) and further in view of Koksbang, et al. (U.S. Pat. No. 5,424,151). Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et

al. (U.S. Pat. No. 5,656,393) and further in view of Koksbang, et al. (U.S. Pat. No. 5,424,151). Claim 31 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et al. (U.S. Pat. No. 5,656,393) and further in view of Tasaka, et al. (U.S. Pat. No. 6,280,854 B1). Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the IPDL JPO Machine Translation for JP 08-064200A in view of Boer, et al. (U.S. Pat. No. 5,656,393) and further in view of Shacklette, et al. (U.S. Pat. No. 4,695,521). Claims 1, 5, 20-22, 24, and 27-29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shacklette, et al. (U.S. Pat. No. 4,695,521) in view of IPDL IPO Machine Translation for JP 08-064200A and Boer, et al. (U.S. Pat. No. 5,656,393). Claim 8 and 26 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shacklette, et al. (U.S. Pat. No. 4,695,521) in view of the IPDL JPO Machine Translation for JP 08-064200A and Boer, et al. (U.S. Pat. No. 5,656,393) and as evidenced by Poehler, et al. (U.S. Pat. No. 5,637,421). Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shacklette, et al. (U.S. Pat. No.4, 695,521) in view of the IPDL JPO Machine Translation for JP 08-064200A and Boer, et al. (U.S. Pat. No. 5,656,393) and in view of Koksbang, et al. (U.S. Pat. No. 5,424,151). Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shacklette, et al. (U.S. Pat. No. 4,695,521) in view of the IPDL JPO Machine Translation for JP 08-064200A and Boer, et al. (U.S. Pat. No. 5,656,393) and in view of Koksbang, et al. (U.S. Pat. No. 5,424,151). Claim 31 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shacklette, et al. (U.S. Pat. No. 4,695,521) in view of the IPDL JPO Machine Translation for JP 08-064200A and Boer, et al. (U.S. Pat. No. 5,656,393) and further in view of Tasaka, et al. (U.S. Pat. No. 6,280,854 B1).

These rejections are respectfully traversed in view of the following discussion.

It is noted that the amendments are made only to more particularly define the invention and not for distinguishing the invention over the prior art, for narrowing the scope of the claims, or for any reason related to a statutory requirement for patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

**I. THE CLAIMED INVENTION**

Applicant's invention, as disclosed and claimed, for example by claim 1, is directed to an electrode.

The electrode includes an electrode material comprising a polymer active material, a conductivity-enhancing agent and a plasticizer, and a current collector sheet. The electrode material and the current collector sheet are molded into one piece, and the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. The plasticizer includes a material for facilitating molding of the molded electrode and enhancing the shape retainability after molding and is present when the molded electrode is in battery operation. (See Page 4, lines 2-9; Page 8, lines 13-25; Page 9, lines 4-13, lines 18-25; and Figures 1 and 4).

A conventional battery includes an electrode material with a coating film having a thickness of 20 μm to 100 μm on a current collector. However, in the conventional art device, the coating film tends to crack during drying, and "this phenomenon is more striking when the coating film is formed in a larger thickness." Thus, it is difficult to form a thick

film and increase the active material, which results in a structure with increased electrical resistance and decreased power density. (See Page 1, lines 12-21; Page 2, lines 2-26; and Page 3, lines 4-13).

In contrast, in the claimed invention, the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration).

An aspect of the inventive structure includes the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet, which provides for a retainable shape of the electrode, and thus "the electrode material can have a large thickness," and "the volume ratio of the electrode material to the current collector can be made large compared with conventional electrodes." (See Page 7, line 14-Page 8, line 10; and Page 9, lines 17-23).

As a result, the inventive electrode has a small internal impedance of the electrode permitting high energy density and high power density, and thus a high degree of freedom is available in designing the battery. (See Page 3, line 19-Page 4, line 9; Page 7, line 14-Page 8, line 10; and Page 9, lines 4-23).

## II. 37 C.F.R. 1.75(c) Objections and 35 U.S.C. § 112, Second Paragraph, Rejections

In response to the 37 C.F.R. 1.75(c) objections and the 35 U.S.C. § 112, Second Paragraph, Rejections, and in accordance with the Examiner's comments, Applicant has amended claims 17, 27, 29, 32, 33, as indicated above, consistent with the Specification.

Regarding the 35 U.S.C. § 112, Second Paragraph, Rejection, to claim 1, Applicant respectfully traverses this rejection as to one of ordinary skill in the art "operation" clearly

refers to a "battery operation."

In view of the foregoing, the Examiner is requested to withdraw these rejections.

## III. THE PRIOR ART REJECTIONS

A. The § 103(a) Rejection of Claims 1, 5, 20, 21, 24 and 27-29

First, the references, separately, or in combination, fail to teach, disclose or provide a reason or motivation for being combined. In particular, JP 08-064200A (" '200A") pertains to an electrode for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a substrate. (See '200A at Abstract; [0007], and [0008–[0010]).

By contrast, Boer, et al. ("Boer") does not have the same aim as '200A. Instead, Boer discloses a flexible polymer bonded electrode composite including a polymer matrix with an electrochemically active particulate material and a microporous conductive sheet encapsulated within the polymer matrix, which provides for a high content of electrochemically active particulate material exhibiting a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration and maintains the condition of the battery during expansion and contraction of cycling. (See Boer at Abstract; Column 1, lines 5-11; and Column 2, line 66-Column 3, line 30).

Nothing within Boer, which pertains an electrode with a high content of electrochemically active particulate material exhibiting a high degree of uniformity of distribution across the sheet, relates to or suggests an electrode for a secondary battery, which

provides for high flexibility and high adhesion with a substrate as disclosed in Boer. Thus, '200A is a stand alone invention which teaches away from being combined with another invention for example Boer.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Second, even if combined, the references do not teach or suggest the features of independent claim 1, including the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. (See Page 4, lines 2-9; Page 8, lines 13-25; Page 9, lines 4-13, lines 18-25; and Figures 1 and 4).

Attached hereto as Exhibit 1, and incorporated by reference herein, is the Declaration of Tetsuya Yoshinari, dated February 6, 2004, which clearly evidences that the molded electrode of the claimed invention provides unexpected superior results as compared to an electrode made by a conventional solvent coating method, as used in the '200A reference.

As Shown in Table 1 and Fig. 1, the result clearly shows that Example B-1 and B-2 where the electrodes were made by conventional solvent coating method do not show the sufficient energy density and output density. Whereas, Examples A-1 to A-4 where the molded electrodes were used shows excellent energy density and output density. In Example, B-2, 1% of dioctyl phthalate as a plasticizer was contained in the positive electrode. The amount of the plasticizer was chosen so as to match the amount used in example 2 of JP08-064200. However, even if the plasticizer is contained, non-molded electrode never gives

good battery properties as shown by Example B-2. The difference of the battery properties is attributed to the difference in density of electrode. Thus, the electrode obtained by molding is different from that obtained by solvent-coating method as product itself.

As indicated above, discussing the differences between Applicant's invention and '200A. As discussed in the Declaration, the density of the electrodes is different between a molded electrode and a solvent-coated electrode, and it affects performance directly. Applicant submits that the limitation by process in a product-by-process claim has to be considered if the product per se obtained by the process is different from an existing conventional product. (See attached Declaration; and Application, Page 3, lines 4-13).

In addition, for example, as recited in new claim 36, Applicant's product may be produced by a process where the press-pressure is limited from 40 to 200 $kgf/cm^2$. Accordingly, for example, as recited in new claim 37, the structure may include a thickness of molded electrode, which is limited to a "thickness more than 500 $\mu$m to 9 mm or less." In contrast, 500 $\mu$m is the maximum thickness obtained by the solvent-coating method. Thus, the shape retainable electrode of thickness more than 500 $\mu$m was never obtained by the conventional method. (See Application, Page 9, line 7; Page 20, line 21; Page 48, line 23-Page 49, line 2).

Third, in addition to the clear distinction of Application's invention over the reference based on the Declaration, as discussed above, Applicant also agrees with the Examiner that '200A does not disclose that "the electrode material comprises a thickness of 300 microns to 9 mm and formed on at least one side of the current collector sheet." (See Office Action, Page 5, 2nd and 4th Paragraphs).

Accordingly, Boer does <u>not</u> make up for the deficiencies of '200A.

Instead, Boer discloses a flexible polymer bonded electrode composite. (See Column 2, line 66-Column 3, line 20). "The subject electrode composite comprises a microporous sheet composed of a substantially uniform mixture of a polymer and electrochemically active and electrically conductive materials which has a porous conductive sheet encapsulated therein." Applicant respectfully submits that the Examiner mischaracterizes Boer as Boer only teaches that the microporous sheet, i.e., "the present sheet matrix, ..., [is] formed into thin composites of less than about 100 mils, preferably less than about 20 mils." Accordingly, Boer does not teach or suggest a thickness of the electrode material, let alone, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet.

In contrast, as indicated above, Applicant's invention teaches the electrode material comprises a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet to provide for an electrode having a small internal impedance with high energy density and high power density, and thus a high degree of freedom available in designing the battery.

Indeed, as noted in the Office Action, neither '200A nor Boer disclose the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. Thus, both references, similarly to the conventional art, may form a film between the electrode material and the current collector resulting in cracking of the coating film, particularly, when trying to form a thick film where the battery may have increased electrical resistance with reduced energy density. (See Page 1, lines 12-21; Page 2, lines 2-26; and Page 3, lines 4-13).

For at least the reasons outlined above, Applicant respectfully submits that neither

'200a nor Boer teach or suggest all of the features of the independent claim 1 and dependent claims 5, 20, 21, 24 and 27-29, which are patentable not only by virtue of their dependency from the respective independent claim, but also by the additional limitations they recite.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, should be fully patentable over the cited references.

B. The Poehler, et al. Reference

Regarding claims 8 and 26, first, as a result of the Examiner's keyword search, Applicant notes that no less than three references have been "kluged" together using impermissible hindsight to yield Applicant's invention. This suggestion on its face clearly strains the reasonableness of what "would have been obvious" at the time of Applicant's invention.

Indeed, Poehler, et al. ("Poehler") does not have the same aim as '200A or Boer, and the combination would not have been made absent hindsight.

Poehler is non-analogous art and is directed to "problems associated with the utilization of conducting polymers in charge storage devices includ[ing] retention of processability at high conductivity levels and environmental stability" by "processing conjugated polymeric electrodes and incorporating them with a gel polymer electrolyte to form an entirely polymeric quasi-solid state charge storage device, that is lightweight, stable, exhibits high reversibility, and maintains high room temperature conductivity." (See Column 1, lines 30-38; and Column 4, lines 5-12).

Nothing within Poehler suggests an electrode for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a

substrate as disclosed in '200A. Poehler also does not suggest a flexible polymer bonded electrode composite with a high content of electrochemically active particulate material, which exhibits a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration as disclosed in Boer. Thus, '200A is a stand alone invention which teaches away from being combined with another invention, such as, Boer or Poehler.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Second, even if combined, Poehler does not make up for the deficiencies of '200A and Boer as indicated above. That is, the references do not teach or suggest the features of independent claim 1, including the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet.

In addition, according to claim 8, Applicant's invention teaches that "the electrode material has unevenness at the surface, the unevenly molded surface includes a shape-retainable surface." Applicant, according to claim 26, also teaches the surface of the electrode material is shaped to increase a surface area of the electrode material with substantially rectangular grooves. (See 13, lines 18-25; and Page 46, lines 9-25).

In contrast, Applicant traverses the assertion in the Office Action that Poehler teaches a polypyrrole film having an inherently rough surface. Applicant respectfully submits that the Office Action mischaracterizes Poehler because Poehler only discloses a randomly formed "

rough surface of the film," which is not the structural equivalent to "the surface of the electrode material includes an unevenly molded surface" of Applicant's invention. (See Column 6, lines 28-37).

Indeed, as indicated, many surfaces may have a random roughness like Poehler, whereas Applicant has specifically molded and engineered the electrode material so the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. Further, the surface of the electrode material may be an unevenly molded surface, for example, as shown in Figure 4, where the surface of the electrode material may include an unevenness in the form of substantially rectangular grooves, for example, as recited in amended claim 26.

Since Poehler does not teach or suggest including the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet, Poehler is deficient and does not teach or suggest Applicant's invention as cited in independent claim 1.

Thus, Poehler also does not teach or suggest the features of claim 8, and similarly claim 26, including the unevenness with substantially rectangular grooves.

For the reasons stated above, the claimed invention, is fully patentable over the cited references.

C. The Koksbang, et al. Reference

Regarding claims 23 and 30, to make up for the deficiencies of '200A and Boer, the Examiner relies on Koksbang, et al. ("Koksbang"). Koksbang fails to do so.

First, Koksbang does not have the same aim as '200A or Boer as discussed above, and the urged combination would not have been made, absent hindsight.

Koksbang discloses a cathode composition, and related method with a first and second polymeric materials where the first material is cured by radiation and the second polymeric material is electrochemically cured. (See Koksbang at Abstract).

Koksbang is specifically directed to solving the drawbacks of increased cell impedance due to the "failure of the cathode material to make good contact with the cathode current collector and with the solid electrolyte layer." Indeed, Koksbang attempts to reduce impedance by enhancing "contact between the positive electrode material and the respective materials of the current collector and the electrolyte layer at the interfaces." (See Column 1, lines 5-15 and 42-60; and Column 4, lines 48-60).

Nothing within Koksbang, which focuses on radiation curing of a first polymeric material and electrochemically curing a second polymeric material to solve the drawbacks of increased cell impedance, has anything to do with an electrode for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a substrate as disclosed in '200A. Koksbang further does not suggest a flexible polymer bonded electrode composite with a high content of electrochemically active particulate material, which exhibits a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration as disclosed in Boer. Thus, '200A teaches away from being combined with each other as well another invention, such as, Boer or Koksbang.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Secondly, Koksbang does not disclose, teach or suggest, including the electrode material and the current collector sheet are molded into one piece. This allows the claimed

electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. (See above).

Further, Koksbang does not disclose, teach or suggest, including the current collector sheet comprises a thickness in a range from greater than 26μm to no more than about 100μm as recited in amended claim 23.

Instead, Koksbang recites a cathode composition, and related method, with a first and second polymeric materials where the first material is cured by radiation and the second polymeric material is electrochemically cured. (See Koksbang at Abstract). Since Koksbang does not disclose, teach or suggest including an electrode material including a polymer active material, a conductivity-enhancing agent and a plasticizer, let alone, the electrode material includes a thickness of 300 μm to 9 mm, Koksbang is structurally deficient. Thus, Koksbang does not teach that the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet as recited in claim 1 of Applicant's invention, and does not teach the specific limitations of dependent claims 23 and 30.

Further, for emphasis, contrary to the assertion in the Office Action, Koksbang only teaches that "the thickness of the current collector ranges from about 5 microns to 25 microns. Preferably, the current collector, is as thin as practicable." Based on Koksbang's structure, which is different than Applicant's structure as indicated above, Koksbang teaches minimizing the thickness of the current collector downward from 25 microns. Since Koksbang does not teach the opposite, i.e., increasing the thickness of the current collector, Applicant traverses the assertion in the Office Action that Koksbang teaches increasing the thickness of the current collector sheet. Thus, Koksbang does not teach or suggest a current

collector with a thickness in a range from greater than 26μm to no more than about 100μm as cited in claim 23. (See Office Action, Page 7; and Koksbang, Column 5, line 57-Column 6, line 15).

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, and related dependent claims 23 and 30, should be fully patentable over the cited references.

D. The Tasaka, et al. Reference

Regarding claim 31, to make up for the deficiencies of '200A and Boer, the Examiner relies on Tasaka, et al. ("Tasaka"). Tasaka fails to do so.

First, Tasaka does not have the same aim as '200A or Boer as discussed above, and the urged combination would not have been made, absent hindsight.

Tasaka discloses a polymer electrode with an "electrode composite material containing an active material containing at least three components of polyaniline, polypyrrole and a quinone compound, a conducting agent and a binder and a collecting body to carry the slurry of electrode composite material. (See Tasaka at Abstract; and Column 11, lines 37-55).

Tasaka is specifically directed to solving the drawbacks of forming a secondary battery with a uniform large electrode area with a large battery capacitance from light-weight conducting polymers. Indeed, Tasaka attempts "to provide a polymer electrode having a high energy density, which is required in a secondary battery having a large battery capacitance." (See Column 1, lines 5-30; Column 1, line 60-Column 2, line 20).

Nothing within Tasaka, which focuses on an "electrode composite material containing an active material containing at least three components of polyaniline, polypyrrole and a quinone compound, a conducting agent and a binder," has anything to do with an electrode

for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a substrate as disclosed in '200A. Tasaka also does not suggest a flexible polymer bonded electrode composite with a high content of electrochemically active particulate material, which exhibits a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration as disclosed in Boer. Thus, '200 A teach away from being combined with each other as well another invention, such as, Boer or Tasaka.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Secondly, Tasaka does not disclose, teach or suggest including the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. (See above).

Further, Tasaka does not disclose, teach or suggest, including a weight ratio is in the range 50:50 to 90:10 of the polymer active material to the conductivity-enhancing agent as recited in claim 31.

Instead, Tasaka recites a polymer electrode with an "electrode composite material containing an active material containing at least three components of polyaniline, polypyrrole and a quinone compound, a conducting agent and a binder." A collecting body is used to carry the slurry of the electrode composite material. (See Tasaka at Abstract; and Column 11, lines 37-55). The electrode composite material includes a binder like the conventional art as indicated above, but does not disclose, teach or suggest an electrode material comprising a

polymer active material, a conductivity-enhancing agent and a plasticizer without a binder. Based on this structure, Tasaka does not teach or suggest a specific thickness range of the electrode material, let alone, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet as cited in claim 1 of Applicant's invention. Accordingly, Tasaka is deficient and thus does not teach the specific limitations of dependent claim 31.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, and related dependent claim 31, should be fully patentable over the cited references.

E. The Shacklette, et al. Reference

Regarding claim 22, to make up for the deficiencies of '200A and Boer, the Examiner relies on Shacklette, et al. ("Shacklette"). Shacklette fails to do so.

First, Shacklette does not have the same aim as '200A or Boer as discussed above, and the urged combination would not have been made, absent hindsight.

Shacklette discloses an anode, and batteries containing the anode, where the anode includes an electronically conductive n-doped conjugated polymer and alkali metal particles distributed throughout the polymer matrix to improve conductivity. Shacklette is specifically directed to "an improved anode for high energy density electrochemical cells." (See Shacklette at Abstract; Column 1, lines 5-15; and Column 2, lines 39-55).

Nothing within Shacklette, which focuses on an "an improved anode for high energy density electrochemical cells," has anything to do with an electrode for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a substrate as disclosed in '200A. Shacklette also does not suggest a flexible

polymer bonded electrode composite with a high content of electrochemically active particulate material, which exhibits a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration as disclosed in Boer. Thus, '200 A teach away from being combined with each other as well another invention, such as, Boer or Shacklette. ...

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Secondly, Shacklette does not disclose, teach or suggest including the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet.

Applicant also agrees with the Examiner that Shacklette does not disclose "that the electrode material comprises a thickness of 300 microns to 9 mm formed on at least one side of the current collector and that the electrode comprises a plasticizer." (See Office Action, Page 11, 3rd Paragraph).

Further, Shacklette does not disclose, teach or suggest, including the electrode material includes a porosity of 20-30% in volume as recited in claim 22.

Instead, as indicated above, Shacklette discloses an anode, and batteries containing the anode, where the anode includes an electronically conductive n-doped conjugated polymer and alkali metal particles distributed throughout the polymer matrix to improve conductivity. Shacklette does not teach or suggest a specific thickness range of the electrode material, let alone, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at

least one side of the current collector sheet.

Since Shacklette does not teach or suggest the features of independent claim 1, Shacklette is deficient and thus does not teach the specific limitations of dependent claim 22. (See Shacklette at Abstract; Column 1, lines 5-15; and Column 2, lines 5-55).

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, and related dependent claim 22, should be fully patentable over the cited references.

F. The § 103(a) Rejection of Shacklette in view of '200A and further in view of Boer

Regarding claims 1, 5, 20-22, 24 and 27-29, first, the references, separately, or in combination, fail to teach, disclose or provide a reason or motivation for being combined.

Nothing within Shacklette as discussed above, which focuses on an "an improved anode for high energy density electrochemical cells," has anything to do with an electrode for a secondary battery containing a plasticizer in a polymer material, which provides for high flexibility and high adhesion with a substrate as disclosed in '200A as discussed above. Shacklette also does not suggest a flexible polymer bonded electrode composite with a high content of electrochemically active particulate material, which exhibits a high degree of uniformity of distribution across the sheet where the material is highly flexible for easy formation into the desired configuration as disclosed in Boer as discussed above. Thus, Shacklette teaches away from being combined with each other as well another invention, such as, '200A or Boer.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Second, even if combined, the references do not teach or suggest the features of independent claim 1, including the electrode material and the current collector sheet are molded into one piece. This allows the claimed electrode to provide superior characteristics over the conventional electrode (as set forth in the attached Declaration). In addition, the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet.

As indicated above, Applicant agrees with the Examiner that Shacklette does not disclose that "the electrode material comprises a thickness of 300 microns to 9 mm and formed on at least one side of the current collector sheet and that the electrode comprises a plasticizer." (See Office Action, Page 11, 3rd Paragraph).

Neither '200A nor Boer solve the deficiencies of Shacklette. As indicated above, the Applicant agrees with the Office Action that '200A also does not disclose that "the electrode material comprises a thickness of 300 microns to 9 mm and formed on at least one side of the current collector sheet." (See Office Action, Page 5, 2nd and 4th Paragraphs). Further, as discussed above, Boer only teaches a thickness of the microporous sheet not the electrode material.

Indeed, none of the references disclose that the electrode material includes a thickness of 300 μm to 9 mm and is formed on at least one side of the current collector sheet. Thus, the references, similarly to the conventional art, may form a film between the electrode material and the current collector with reduce adhesivity resulting in cracking of the coating film, particularly, when trying to form a thick film where the battery may have increased electrical resistance with reduced energy density. (See Page 1, lines 12-21; Page 2, lines 2-26; and Page 3, lines 4-13).

For at least the reasons outlined above, Applicant respectfully submits that none of the references teach or suggest all of the features of the independent claim 1, and dependent claims 5, 20-22, 24 and 27-29, which are patentable not only by virtue of their dependency from the respective independent claim, but also by the additional limitations they recite.

Finally, as discussed above, none of the additional references, including Poehler, Koksbang, and Tasaka, separately, or in combination, make up for the deficiencies of Shacklette, '200A and Boer, and thus teach or suggest all of the features of the independent claim 1, and dependent claims 8, 23, 26, 30 and 31, which are patentable not only by virtue of their dependency from the respective independent claim, but also by the additional limitations they recite.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, should be fully patentable over the cited references.

## IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-10 and 17-38, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 2/23/04

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